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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,857	02/11/2002	Dominique Loubinoux	4068-040	8967
22850	7590	04/16/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			AFTERGUT, JEFF H	
			ART UNIT	PAPER NUMBER

1733

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No. 10/068,857	Applicant(s) LOUBINOX, DOMINIQUE	
	Examiner Jeff H. Aftergut	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 and 19-37 is/are pending in the application.
- 4a) Of the above claim(s) 32-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, 19-31 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1733

Election/Restrictions

1. Applicant's election with traverse of the restriction between group I and group III in the response dated 12-15-03 is acknowledged. The traversal is on the ground(s) that the processing is the same and therefore the product must be the same. This is not found persuasive because the process could be practiced with different materials such that the shrinkage in the finished assembly was greater than 6% and therefore a materially different product would have been produced with the process as claimed. Note that claim 36 is a product claim. It should be noted that applicant has not traversed the restriction of the apparatus from the method and product (Group II). Claims 32-36 stand as withdrawn from consideration as a function of relating to different inventions (via the restriction requirement).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by O'Connor '113.

O'Connor '113 suggested that it was known to commingle a thermoplastic fiber and a reinforcing fiber together and to form the same into a hybrid yarn of material. The hybrid yarn of material was then woven into a fabric on a commercial weaving loom. The reference suggested that after fabric formation, the fabric was subjected to heat with optional pressure in order to form the composite fabric material. applicant is referred to column 2, lines 35-51 for the

Art Unit: 1733

thermoplastic fibers used, column 3, lines 19-31 for the reinforcement utilized, column 3, lines 34-42 and column 4, line 67-column 5, line 8 for the weaving of a fabric from the hybrid yarns, and column 4, lines 6-43 for the heat treatment performed upon the so formed fabric.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 17, 19-21, 29-31 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Whisler et al '262.

Whisler '262 suggested that it was known to provide a lap of fibers which were commingled fibers and which were provided such that the fibers were disposed and/or fed along the former in a parallel direction to the feed direction of the machine. More specifically, Whistler '262 suggested that the layer 142 was provided and fed along the machine direction. The film 142 was a plastic film which was melted in the processing to adhere the fibers together. As an alternative to using this film 142 which was fed in the machine direction, the reference to Whistler '262 suggested that those skilled in the art at the time the invention was made would

Art Unit: 1733

have understood that commingled fibers of glass and plastic material would have been a suitable alternative, see column 8, lines 52-column 9, line 10. Whisler '262 suggested that one provided a second bundle of the fibers of commingled material in the form of wrapped strands 20 which can be wrapped at angles of 87 degrees (i.e. substantially transverse the angle of the machine direction 330 of the strands of commingle used for layer 142) and disposed the same upon the first layer of commingled fibers such that the arrangement of fibers was substantially transverse to the first direction to provide a combination of threads. The combination of strands was then heated under pressure with heating and combining arrangement 80. the sheet was then collected. The reference suggested that commingled fibers would have been those produced according to the techniques of U.S. patent application serial number 08/311,817, see column 7, lines 39-46 , where the reinforcing fibers were disclosed as glass and the polymeric fibers were stated to be thermoplastics (like polypropylene or polyethylene). U.S. patent application 08/311,817 matured into US Patent 5,626,643 to Woodside et al and expressly suggested that the commingled fibers from 30-70 percent thermoplastic (second fiber) content, see column 6, lines 18-25, column 4, lines 45-50, noting that the first fibers were described as glass fibers. Clearly, Whisler et al '262 contemplated use of commingle fibers which had at least 10% thermoplastic fiber material therein. In any event, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ commingled fiber strands for both the fibers wrapped about the form as well as the fibers fed parallel to the machine direction along the form wherein the fibers included commingled fibers having at least 10% thermoplastic organic fiber therein in the process of Whisler et al '262 as the reference suggested such machine direction reinforcement

Art Unit: 1733

would have been useful and those skilled in the art would have known that commingled fibers typically included at least 10% thermoplastic to the reinforcement therein.

With respect to claim 19, note that Whisler '262 provided the strands as separate unconnected strands. Regarding claim 20, note that Whisler suggested 100% commingled threads in the process. Regarding claim 21, note that the commingled threads are mixed as claimed as evidenced by Woodside '643 which was incorporated by reference in Whisler '262. Regarding claim 21, note that the references suggested the use of glass as the reinforcing fiber and thermoplastic organic material as the other fiber in the commingled fibers. Regarding claim 29, the reference suggested that additional layers such as those at 184, 186 would have been added as desired and such clearly would have affected the mechanical properties of the assembly. Regarding claim 30, note that the reference suggested the addition of layers 184, 186 as well as the use of layer 142 and one skilled in the art would have understood use of such layers would have satisfied the requirements of the claim. Regarding claim 31, note that the reference suggested that those skilled in the art at the time the invention was made would have added the exterior layers as desired to effect the properties one wished to attain.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 17, 19-24, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whisler et al '262 in view of Woodside et al '643 (of record) optionally further taken with Vane.

Art Unit: 1733

Whisler et al '262 is discussed in detail above in paragraph 6 and applicant is referred to the same for a complete discussion of the reference. The reference failed to expressly state what was meant by commingled fibers and what percentage of the fiber was thermoplastic. Woodside '643 expressly suggested in the process of making a commingled yarn that one skilled in the art would have incorporated 30-70% thermoplastic fiber with the reinforcing fiber in the commingled yarns described therein, see column 6, lines 18-26. clearly, the reference to Whisler et al suggested that one skilled in the art at the time the invention was made would have been directed to utilize the commingled filament yarns of Woodside '643 as described at column 7, lines 39-46. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the composite hybrid yarns of Woodside et al '643 in the operation of Whisler '262 as such was suggested by Whisler et al '262 therein wherein the composite threads would have had at least 10% thermoplastic filaments therein.

With respect to claim 19, note that Whisler '262 provided the strands as separate unconnected strands. Regarding claim 20, note that Whisler suggested 100% commingled threads in the process. Regarding claim 21, note that the commingled threads are mixed as claimed as evidenced by Woodside '643 which was incorporated by reference in Whisler '262. Regarding claim 21, note that the references suggested the use of glass as the reinforcing fiber and thermoplastic organic material as the other fiber in the commingled fibers. Regarding claims 22-24, the particular fabric forming techniques used to form the cross lapped and/or biased layers are taken as conventional in the art of weaving and or manipulation of strands to form non-woven materials. Namely, the use of a rapier loom, a weft insertion carriage and a netting loom were all well known techniques used in the art for forming nonwoven layers with the fibers

Art Unit: 1733

oriented in a specified direction and the use of the same in the operation would have been within the purview of the ordinary artisan. The applicant is advised that such was taken as conventional in the Office action dated 6-16-03 and applicant did not refute the same (therefore it is believed that applicant agrees with this Office position). Regarding claim 29, the reference suggested that additional layers such as those at 184, 186 would have been added as desired and such clearly would have affected the mechanical properties of the assembly. Regarding claim 30, note that the reference suggested the addition of layers 184, 186 as well as the use of layer 142 and one skilled in the art would have understood use of such layers would have satisfied the requirements of the claim. Regarding claim 31, note that the reference suggested that those skilled in the art at the time the invention was made would have added the exterior layers as desired to effect the properties one wished to attain.

While the references as set forth above in suggested the overall operation, to further evidence that those skilled in the art of composite manufacture would have known to incorporate thermoplastic fibers within the reinforcement to make the composite sheeting, the reference to Vane is cited. Vane suggested that those skilled in the art would have incorporated thermoplastic fibers in whatever amount desired for a matrix in the manufacture of a composite lay-up of layers wherein the orientation from one layer to the next was varied dependent upon the characteristics one wished to attain in the finished assembly. It would have been obvious to one of ordinary skill in the art of composite article manufacture to incorporate thermoplastic filaments within the reinforcing filaments of Whisler as modified by Woodside et al and as further supported by Vane as such manufacture for forming composite sheeting was known by the ordinary artisan at the time the invention was made.

Art Unit: 1733

9. Claims 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 8 further taken with either one of O'Connor or PCT WO 97/26397 for the same reasons as expressed in the Office action mailed 6-16-03, paragraph 10.

10. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Connor further taken with any one of Curzio (newly cited) , Kent et al (newly cited), Holliday or McMahon et al

O'Connor is discussed in detail above in paragraph 3 and applicant is referred to the same for a complete discussion of the reference. The reference suggested the overall operation including the application of a woven fabric in the operation. To further emphasize that those skilled in the art of manufacturing composites from commingled yarns would have known to form the same into woven fabric which were then subjected to the application of heat and pressure to form the composite articles, the references to Holliday (column 8, lines 35-40), Curzio (column 3, lines 8-17), Kent et al (column 7, lines 10-15), and McMahon et al (column 14, line 51-column 15, line 3) are cited. Each of Curzio, Kent et al, McMahon et al and Holliday suggested that those skilled in the art of composite article manufacture would have known to form a woven fabric from commingled fibers utilizing conventional weaving techniques. It is well known to feed warps in a loom in a continuous operation to weave a fabric from the same where the fibers were fed at 90 degrees to each other to make the fabrics in weaving. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a composite fabric from woven commingled yarns followed by application of heat and pressure to the same as suggested by any one of Curzio, Kent et al, McMahon et al and Holliday in the operation of making the composite fabric of O'Connor.

Response to Arguments

11. Applicant's arguments with respect to claims 17, 19-31, and 37 have been considered but are moot in view of the new ground(s) of rejection.

The applicant argues that there must be a reason to combine the references and that the reference to Diehl related to the use of thermosetting resins and not thermoplastics. It should be noted that Diehl has been removed from the prior art rejections set forth herein. Additionally, applicant is advised that it would appear that the reference to Whisler '262 anticipates the claimed subject matter. Furthermore, applicant is advised that the reference to Vane suggested various fiber angle arrangements and those skilled in the art would have readily appreciated that the artisan would have designed the composite material with the requisite strength as a function of the angled layers of fibers and certainly the number and ordering of the layers was a function of the end product being manufactured. Applicant is advised that those skilled in the art at the time the invention was made would have known to utilize commingled strands and/or yarns to form hybrid fabrics (either woven or non-woven) to make composite articles therefrom.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff H. Aftergut
Primary Examiner
Art Unit 1733

JHA
April 12, 2004